The Mineral Newsletter

Meeting: February 23 Time: 7:45–9:00 p.m.

Long Branch Nature Center, 625 S. Carlin Springs Rd. Arlington, VA 22204

Volume 56, No. 2
February 2015

You can explore our club website:
http://www.novamineralclub.org/

Happy Valentine's Day!

Northern Virginia Mineral Club members,

Please join our February 23 speaker, Pete Chirico, for dinner at the Olive Garden at 6 p.m.

Olive Garden, Baileys Cross Roads (across from Skyline Towers), 3548 South Jefferson St. (intersecting Leesburg Pike), Falls Church, VA
Phone: (703) 671-7507

Reservations are under Kathy Hrechka, Vice-President, NVMC. Please RSVP to my cell at 703-407-5393 or kshrechka@msn.com.

Mapping and Monitoring Conflict Diamonds in Africa

February 23 Program

Mr. Peter Chirico will deliver a presentation on mapping and monitoring conflict diamonds in central and western Africa using an integrated science approach. Mr. Chirico will summarize the USGS project supporting the U.S. Department of State in implementing the Clean Diamond Trade Act and the Kimberley Process Certification Scheme to prevent conflict diamonds from reaching the international market.

He will explain the importance of mapping and monitoring diamond resources, especially in light of recent conflicts in Africa, such as the rebel takeover in the Central African Republic. He will talk about how this work informs foreign policy decisionmaking, resource management, and international development.

Ruby ring, with a 5.65-carat ruby from Thailand, part of the Smithsonian's National Gem Collection. Photo: Chip Clark.
http://geogallery.si.edu/index.php/en/1005712/ruby-ring

Mr. Chirico earned a B.A. degree in geography at the University of Mary Washington in 1993 and an M.A. in geography at the University of South Carolina in 1995. He is currently a part-time Ph.D. student at the University of Maryland, Baltimore County, in the Geography and Environmental Science Department.

For the past 18 years, Mr. Chirico has been working as a geographer for the USGS in Reston, VA. He mainly researches and applies geographic information systems and satellite remote sensing techniques to the study of geomorphology, terrain analysis, and natural resource mapping projects in cooperation with the USGS International Programs Office.

Since 2006, he has been the project chief of the Kimberley Process Certification Scheme Alluvial Diamond Resource Project. He is responsible for developing resource and production capacity assessments of alluvial diamond deposits throughout several countries in central and western Africa. He combines fieldwork with geospatial technologies to map and quantify the geomorphology of alluvial diamond occurrences and to contribute to a better understanding of the distribution of these resources, which play an important role in transnational security issues.

Previous Meeting Minutes
January 26, 2015

The January club meeting was canceled due to predicted snowfall. Safety first!

Mineral of the Month: Sugilite

by Hutch Brown, Editor

Sugilite is a pink to purple cyclosilicate mineral usually found in massive form. The Japanese petrologist Ken-ichi Sugi (1901–48) first described sugilite in 1944, when he found it in syenite (similar to granite but without quartz) on Japan's Iwagi Island. The Wessels Mine in Northern Cape Province, South Africa, produces sugilite from a manganese deposit.

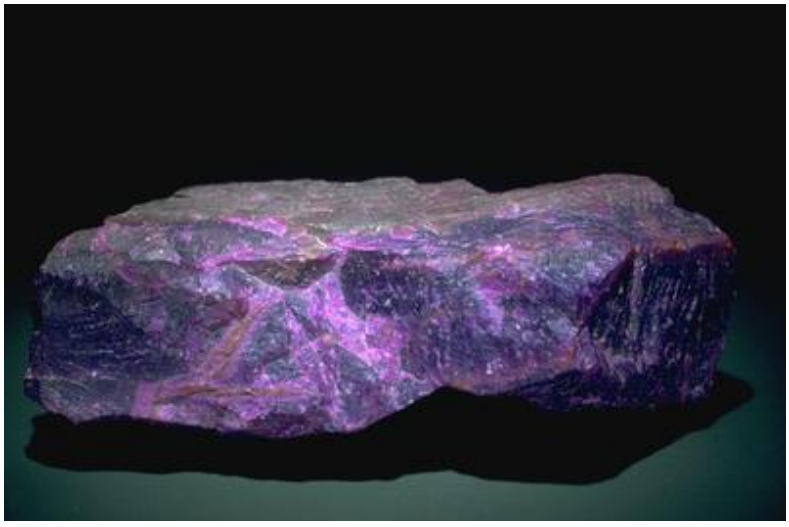
Sugilite has a Mohs hardness of 6 to 6.5 and a vitreous luster.

Sources: Mindat, Wikipedia.

In this issue …

News about our members …

Our club members like to hear news about each other! Whether it's a retirement, a new job, a new home, a new addition to the family, or even just a birthday … whether it's news about you or about someone in the club you know, let your club newsletter editor know at hutchbrown41@gmail.com, and he will make it a regular feature in our club newsletter!



Sugilite from Palabora B, South Africa.
Smithsonian National Mineral Collection. Photo: Chip Clark.
http://geogallery.si.edu/index.php/en/1107444/sugilite

Federation Fundraising for Scholarships and Special Projects

by Sheryl E. Sims

Maybe you know that the NVMC has a program for funding scholarships for deserving students in fields related to our hobby. Our club supports the Fred C. Schaefermeyer Scholarship Fund with proceeds from our club auctions and from our annual GMU club show.

But what about our regional and national federations? Do they also have scholarship funds?

Per EFMLS Editor Carolyn Weinberger, the EFMLS does not have its own scholarship fund. However, the AFMS does, and it asks individuals and clubs to contribute. The money contributed is invested, with the interest used to fund $4,000 scholarships each year for 12 students.

Two students are selected from each contributing federation, and an honorary recipient named by the federation makes the selections. If the honorary recipient is a professor, he or she may make the selections personally or have a school of his or her choice make the selections. All scholarship recipients are graduate students in the Earth sciences.

If you wish to make a donation to the AFMS scholarship fund, you can send a check payable to AFMS Scholarship Foundation to Ken Creed, EFMLS Coordinator. For his mailing address and any further information you might need, you can contact him at kcreed@maine.rr.com.

You can also make an indirect donation by sending mineral specimens to the AFMS Endowment Fund Drawing, to be used as prizes for the drawing at the AFMS annual convention. Tickets are sold for $5 each or five for $20; this year's convention will be held in Austin, TX, on October 23–25. For more information on the AFMS Endowment Fund, contact Carolyn Weinberger at editor@amfed.org.

Although the EFMLS does not have a scholarship program, it does have an endowment for special projects called the Eastern Foundation Fund (EFF). For example, the EFF recently funded duplication of the Rochester Symposium tape programs from videotape to DVD.

Again, only the interest earned from the principal goes to fund special projects. If the interest is not spent in a given year, it is deposited into the untouchable principal. If you would like to make a contribution to the EFF, you can send it to the attention of Michael Kessler, EFF Chair, at 4 Longfellow Road, East Stroudsburg, PA 18301.

You can also make mineral contributions for the auction held each year during the EFMLS annual convention. The proceeds go into the EFF. This year, the convention will be held in Hickory, NC, on March 27–29. For more information and for a mailing address, please contact EFF Chair Michael Kessler at quartz7228@aol.com.

Cutting Opals into Cabochons Advice Needed!

Do you know how much it might cost to cut the opals shown below into cabochons? If I can afford to have just two of the stones cut, then that's what I will do.

Although I know the opals are low in quality, I don't know much about the lapidary process, so I would greatly appreciate any information! Any advice you can give me will help me determine whether I want to collect opals or sell rough opals as a hobby.

Thanks for your kindness! Please contact me, Patricia Chekole, at 703-220-5808 or at patricia.ann777@yahoo.com.

Club Rockhound of the Year

Editor's note: The article is adapted from EFMLS News *(February 2015), p. 4.*

by Kathy Hrechka, Vice-President

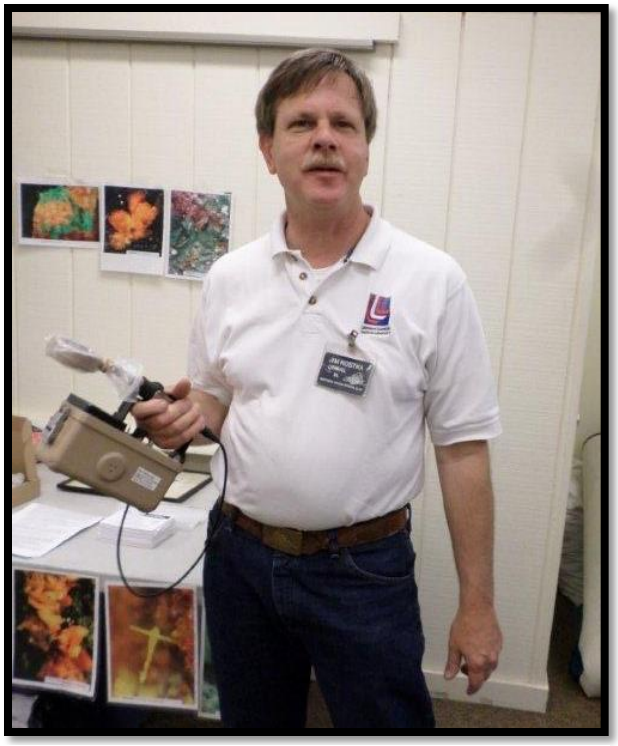
The Northern Virginia Mineral Club would like to honor Jim Kostka as our 2014 Rockhound of the Year.

Jim maintains our 200-person membership list; e-mails the newsletter and club announcements; and has, for the past 5 years, been cochair of our show, where he handles publicity, setup, creating the Scout corner for education and outreach, and much more.

Jim's assistance with his Geiger counter effort is wide ranging, with identification, education, and RAD removal. He uses his skills as a hobbyist specializing in geology educational outreach and recycling old collections to teach and promote geology activities in the Cub Scouts and area schools and nature centers.

And that's just the short list!

We are pleased to honor Jim Kostka as our Rockhound of the Year for 2014.



Jim Kostka giving a presentation on radiation and radioactivity in rocks and minerals at the June 2014 NVMC meeting. Photo: Sheryl Sims.

Field Trip: James Madison University

by Kathy Hrechka

On February 14, many of our local geology club members carpooled to James Madison University to get a special tour of the JMU Mineral Museum from Dr. Lance E. Kearns.

Lance had many minerals and micromounts available for our mineral study choices. Fellowship and mineral excitement in his lab made for an enjoyable day at JMU. I was able to briefly view the famous Dr. Philip Cosminsky micromineral collection!

Below left: Dr. Lance Kearns with Mr. and Mrs. Nelson Neese.

Cold Weather Fun

by Sheryl E. Sims

Have you ever wondered what busy rockhounds do on cold, snowy weekends? They allow you to contact them at the last minute and bring a friend over for a spontaneous mineral lesson! That is exactly what our friend and fellow club member, Jim Kostka, did. He is frequently rewarded and praised during our meetings for both the great and the small things that he does. This is why.

As is frequently the case, I was talking rocks and minerals with my friend Pamela Smith. She was listening patiently despite the fact that I knew that she doesn't really share my passion for minerals. Still, I thought a road trip would do her good. So I asked whether she wanted to take a ride with me to Leesburg. She did. I didn't tell her it was to see Jim's garage.

Once at Jim's house, he revealed other passions of his that I never knew about: home renovation and mural painting! Then we visited his mineral lab in his basement and saw his collection, which was very interesting. We explored the depths of his garage—Jim has so many rocks and so much lapidary stuff that he will never get a car in there again!

Outside, however, was where the real fun began. Piles of all sorts of rocks and minerals encircle Jim's house. Jim explained each pile and how various teachers and naturalists from nature centers come by to see samples of minerals they might want to use for educational purposes. Teachers, nature centers, and other educators take boxes of mineral samples for teaching purposes. Nicer rocks and mineral samples are borrowed and returned on an honor-system basis.

What a delight it was for both Pam and me! I had heard about the depths of Jim's garage, but seeing it in person was something else! As we all know, Jim is very generous. It did not escape his sharp eyes that Pam seemed to brighten at the sight of certain pieces of prehnite and rose quartz. Needless to say, he gave her some of both before we left. She was also pretty pleased to get a piece of red Seneca Creek sandstone from the Smithsonian Castle.

Thanks to help from Jim and many other club members, I continue to enjoy creating new rockhounds, one mineral encounter at a time.

America the Beautiful
Federal Lands Recreational Passes

Editor's note: The article is adapted from A.F.M.S. Newsletter *(November 2014), p. 7.*

*M*any of our federally administered national parks, national forests, and other public lands require an entrance fee. In our area, Great Falls National Park, Prince William Forest Park, and Shenandoah National Park require federal user fees, as do some sites in the national forests of Virginia and West Virginia.

If you're a frequent user, consider purchasing an annual (or lifetime) pass to help mitigate your costs (fees are subject to change).

Annual Pass: $80 per year (12 months from date of purchase), available to everyone; obtain in person at any federal recreation site; can also obtain online at http://www.store.usgs.gov/pass or by calling 1-888-275-8747.

Annual Pass for U.S. Military: Free, for U.S. military members and dependents in the Army, Navy, Air Force, Marines, and Coast Guard; also available to Reserve and National Guard members; obtain in person at a federal recreation site showing a Common Access Card (CAC) or Military ID (form 1173).

Senior Pass: $10 lifetime pass, for U.S. citizens or permanent residents age 62 or older; may be obtained in person at a federal recreation site or through the mail using the application form accessible at http://www.nps.gov/findapark/passes.htm; applicants must provide documentation of age and residency or citizenship; may provide a 50-percent discount on some amenity fees charged for facilities and services such as camping, swimming, boat launch, and specialized interpretative services; generally does not cover or reduce special recreation permit fees or fees charged by concessioners.

Access Pass: Free, for U.S. citizens or permanent residents with permanent disabilities; may be obtained in person at a federal recreation site or through the mail using an application form ($10 processing fee); applicants must provide documentation of permanent disability and residency or citizenship; may provide a 50-percent discount on some amenity fees charged for facilities and services such as camping, swimming, boat launching, and specialized interpretive services; generally does not cover or reduce special recreation permit fees or fees charged by concessionaires.

Volunteer Pass: Free, for volunteers with 250 service hours with federal agencies that participate in the Interagency Pass Program; contact your local federal recreation site for more information about volunteer opportunities or visit http://www.Volunteer.gov.

NOTE: **Golden Access** and **Golden Age Passports** are no longer sold but will continue to be honored according to the provisions of each pass.

The agencies that participate in the Interagency Pass Program are the National Park Service, U.S. Forest Service, U.S. Fish and Wildlife Service, Bureau of Land Management, and Bureau of Reclamation.

You can find more information about federal passes at http://www.nps.gov/findapark/passes.htm.

Fall Line zone along Quantico Creek in Virginia.
Photo: National Park Service

Prince William Forest Park in Virginia has a self-guided Geology Trail along Quantico Creek. The **Cabin Branch Pyrite Mine** operated there from 1889 to 1920. During the mine's operation, more than 200,000 long tons of pyrite were brought to the surface and processed into sulfuric acid, used to make soap, fertilizer, and gunpowder.

EFMLS Safety Message:
Safety Matters—Stop!

by Ellery Borow, EFMLS Safety Chair

Editor's note: The article is adapted from EFMLS News *(November 2014), p. 5.*

Yes—stop … look … listen—and be safe!

One often hears that there is no such thing as an accident. I subscribe to the notion that there *are* accidents—that there are things we have no control over.

With your automobile, you might have followed every recommended maintenance schedule, had regular service, and secured second opinions on any matter of concern … and yet you might *still* have had breakdowns at the most inconvenient times. Even after paying the most thoughtful and proactive attention to maintenance and service schedules, you might still have problems. With that said, I still believe that by reading the manual, following the guidelines, paying attention to what you are doing, and using your commonsense, you can prevent the vast majority of those inconvenient things we call accidents.

Being human beings, we sometimes get into a groove, a rut, a certain way of doing things. In fact, we do some things so often that we hardly pay attention to what we are doing. How many times have you swung a rock hammer, lit a jeweler's torch, touched a stone to a grinding wheel? Do you think of all the many safety concerns associated with each of those actions?

I'm guessing probably not, just because we do these things (and so very many others) so often that our brains just sort of go on automatic. After all, we have done these things hundreds, maybe thousands of times—and all without incident or accident.

Routine tasks are indeed routine, but let me assure you that no two actions, no matter how similar, can ever be exactly the same. In the small dissimilarities from one torch lighting to the next, from one hammer swing to the next, from one touch of a stone to the wheel to the next lie the safety gremlins; the slightest of opportunities invite those pesky little accidents into our lives.

Stopping, looking, listening, and all those many other precautions required to be safe take time away from the activities we enjoy. But so do trips to get a bandage, find the antibiotic ointment, or—dare I say it—go to the hospital.

Stopping, looking, and listening are what we already do on some subconscious level. Things we perceive as higher risk get more of our attention. The problem is that even low-risk repetitions—the most monotonous and boring tasks—can pose risks; as such, they deserve our full attention.

Now how do you stay safe by paying full attention to every task at hand? Some suggestions:

1. Keep in mind that every activity is new and different, even a task as simple as using a rock hammer.
2. Treat every activity as a chance to practice your technique.
3. Look for an opportunity to see every activity in a new light.
4. Remember that every activity presents a chance to learn.
5. Use every activity as new and fertile ground to be creative.
6. Know that every activity has the potential to be boring but still deserves your full attention when safety is of concern.

Yes—stop, look, and listen! In fact, feel free to employ all of your senses, even ones that might not seem needed. I have prevented disaster by sensing vibration from an unbalanced silicon grinding wheel and shutting down the machine before an accident occurred.

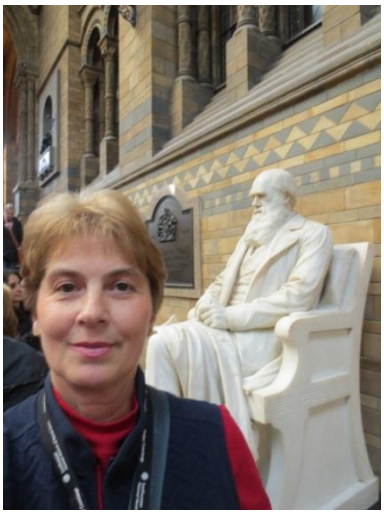
Yes—use all of your senses, even the most common one—your commonsense. Your safety matters—and that is no accident!

Natural History Museum in London
In Search of Smithsonite

by Kathy Hrechka, Vice-President

The Natural History Museum in London is home to 8 million specimens in five main collections: botany, entomology, mineralogy, paleontology, and zoology. The museum is known for its ornate architecture and its exhibition of dinosaur skeletons. A large *Diplodocus* cast known as Dippy dominates the vaulted central hall—a 105-foot-long replica of a *Diplodocus carnegii* skeleton. The cast, a copy of the original skeleton at the Carnegie Museum in Pittsburgh, PA, was a gift from Andrew Carnegie in 1905.

Until 1992, the museum was officially known as British Museum (Natural History), despite legal separation from the British Museum itself in 1963. The landmark Alfred Waterhouse building was built and opened by 1881. It originally contained part of the British Museum collection and later incorporated elements of the Geological Museum.



The author in front of a statue of Charles Darwin.

The Darwin Centre

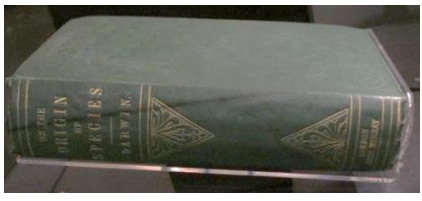
The Darwin Centre, named for Charles Darwin (1809–82), is a more recent addition, designed to house tens of millions of preserved specimens and to provide new educational experiences for visitors as well as new work spaces for the museum's scientific staff. Built in two phases, the center has two new buildings adjacent to the main Waterhouse building. Phase one opened to the public in 2002. It houses the zoological department's "spirit collections" (organisms preserved in alcohol). Many of Darwin's specimens stem from his 5-year HMS Beagle voyage. Phase two of the center was opened to the general public in September 2009.

I experienced all this when I recently accompanied my daughter, Julia, to London, where she is studying abroad for a semester at college. I decided to take an entire day to explore the Natural History Museum and especially the geology hall. I also took a "behind the scenes tour," during which I was privileged to observe Type specimens from Charles Darwin's collection. (No photos were allowed in the Darwin storage area.)

London's Natural History Museum (top), with a Diplodocus *cast dominating the central hall (bottom). All photos: Kathy Hrechka.*

Smithsonite

I was looking for smithsonite minerals, named after the British geologist James Smithson, who founded the Smithsonian Institution in Washington, DC. In 1829, Smithson donated half a million dollars to the United States Congress for "[t]he increase and diffusion of knowledge amongst men." Thanks to his legacy,

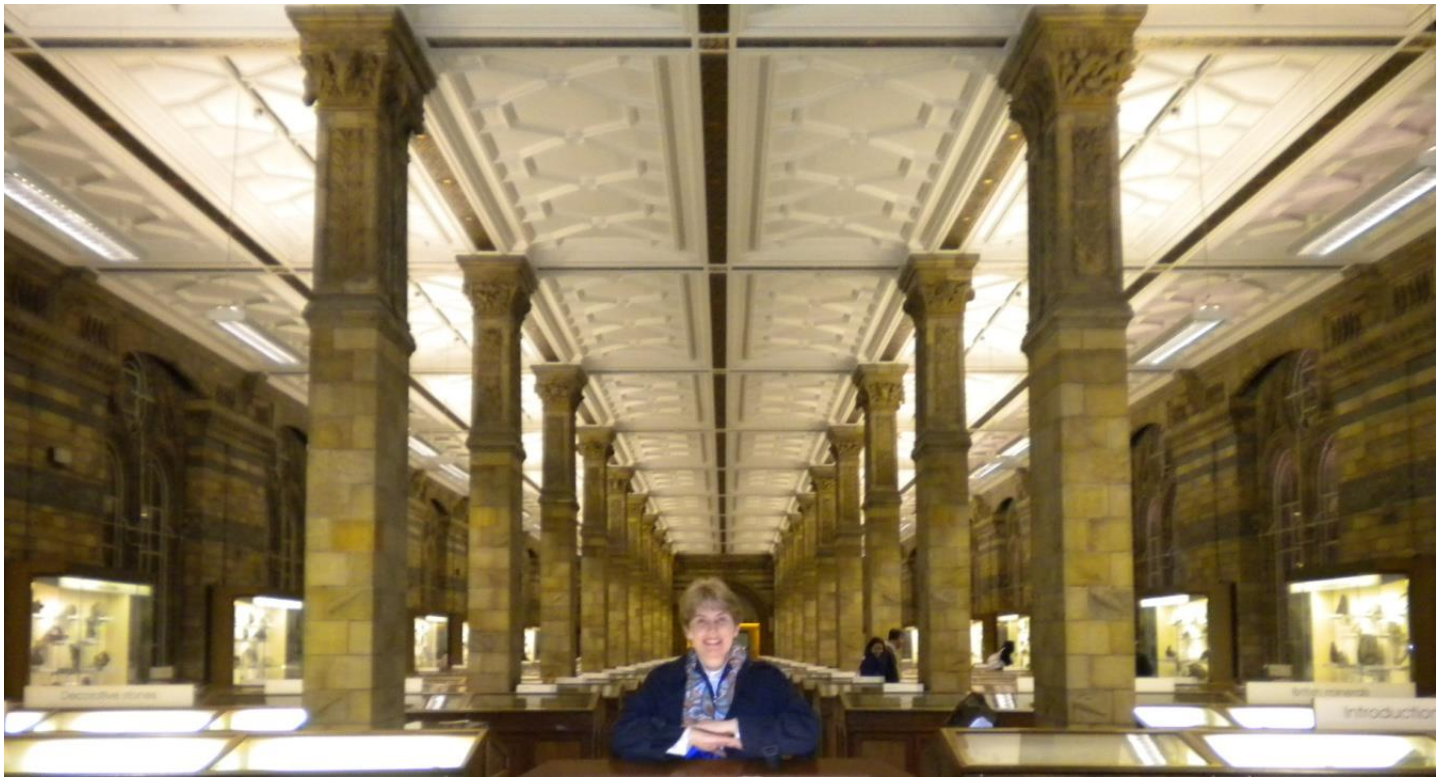


An original copy of Darwin's Origin of Species *(1859).*

the Smithsonian Institution has become one of the finest museums in the world.

Most of the grand minerals I saw were from Great Britain. However, I was pleasantly surprised to discover a cut and polished unakite from Loudon County in Virginia. Unakite is the state stone of Virginia.

Various minerals on display in the geology hall, including smithsonite (the shiny blue-green mineral above) and unakite (the reddish-green mineral to the left). Below: The author in the geology hall.



Aurora Pyramid of Hope: Diamond Collection

To my surprise, I was dazzled in The Vault by the most beautiful collection of diamonds, all displayed in micromounter fashion. The display, called the Aurora Pyramid of Hope, is a suite of naturally colored diamonds. Containing 296 stones for a combined weight of 267.45 carats, this famed collection illustrates the full range of fancy colors in diamonds. These rare treasures are housed in The Vault, a new permanent gallery that opened at the Natural History Museum in 2007.

What made the display fascinating was the fact that the lighting rotated from natural to ultraviolet light. The diamonds were organized in a unique pattern, and I spent my time trying to memorize the cuts and colors of each one. I was looking for a blue diamond, waiting for it to fluoresce fiery red like the Hope Diamond. I found no such match.

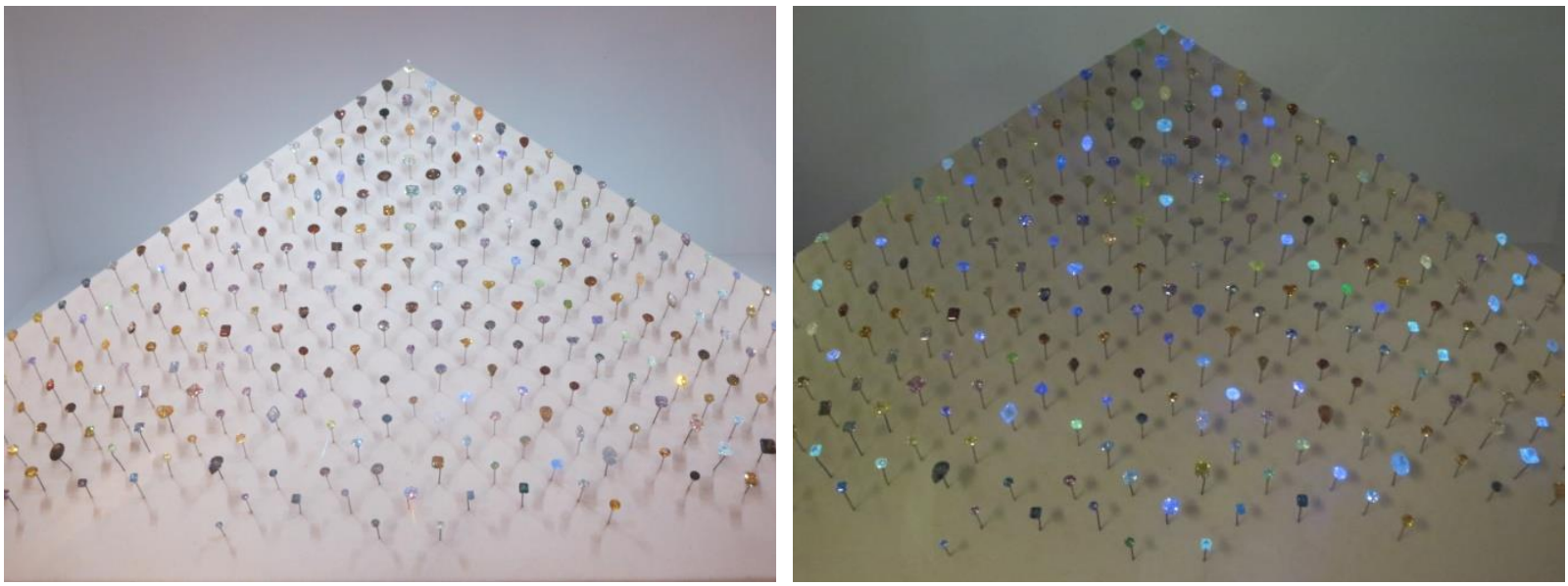
The collection is owned by Aurora Gems, Inc., a diamond merchant specializing in fancy colored diamonds. The collection has been displayed on loan in a pyramid-shaped display case in various major museums since 1998. Aurora Gems was founded by Harry Rodman (1909–2008), a gold refiner from the Bronx, and Alan Bronstein, a diamond dealer from New Jersey, who began collecting colored diamonds in 1979.

The original 260-gem collection was on public display at the American Museum of Natural History in New York from 1989 to 2005 in the Morgan Hall of Gems. It was the centerpiece for the museum's 1998 exhibition *The Nature of Diamonds*, which toured Japan, Canada, and the United States. In 2005, the collection moved to the Natural History Museum in London. At that time, 36 new specimens were added to the original 260 diamonds.

Sources

N.a. 2015. Natural History Museum, London. Wikipedia, the free encyclopedia. http://en.wikipedia.org/wiki/Natural_History_Museum,_London

N.a. 2015. Aurora Pyramid of Hope. Wikipedia, the free encyclopedia. http://en.wikipedia.org/wiki/Aurora_Pyramid_of_Hope



The Aurora Pyramid of Hope at the Natural History Museum in London. Left: natural light; right: ultraviolet light.

The Rocks Beneath Our Feet
The Potomac Formation

by Hutch Brown, Editor

When I was a kid, I fished local creeks in our area. The creeks were small and my gear was modest—fishing line wrapped around a knob of wood, with a bobber and hook. I would bait the hook with balls of Wonder Bread and toss it into the creek.

I caught lots of fish in the sunfish and minnow families, some 12 inches long or more. Once, I caught an eel; another time, a snapping turtle ate the sunfish I'd left on a stringer attached to some tree roots. Fishing our local creeks was a great experience for a kid.

But even in those days—the mid-1960s—our local streams were degrading. I remember huge floods, and I noticed gashes in the creek banks where I fished, like the one shown on the right.

When my son Alex was old enough, I took him down to our local Arlington creeks. But we saw only tiny minnows, and one creek lacked even those. It was a sign of how much things had changed.

The creeks in our area are now deeply incised conduits for stormwater runoff, which destroys most habitats for aquatic life. Go down to any creek in Arlington and you will see erosion down to the crystalline basement rock. The bedrock in Arlington is mostly a metamorphic rock called Indian Run sedimentary melange, formed from sediments laid down in an ancient ocean trench more than half a billion years ago.

Fall Line Zone

You will also see the Potomac Formation overlying the bedrock, now exposed by erosion. The formation is not made of rock but rather of ancient sediments. It once formed creek beds in our area, but it has long since been scoured away by stormwater runoff.

There are outcrops of the formation near the Long Branch Nature Center where our club meets, including the ledge of land the nature center sits on (fig. 1). I found the outcrops on a geologic map of Arlington County marked as Kpu—"K" for Cretaceous, "p" for Potomac, and "u" for undivided (meaning a mixture of sediments ranging from cobble, to sand, to clay). Another, smaller member nearby is marked as Kps—"s" for sand.

The Potomac Formation near Long Branch Nature Center in Arlington, VA. The formation, exposed by erosion, includes unconsolidated sediments ranging from cobble to clay. Photo: Hutch Brown.

Both members are part of the Potomac Formation of unconsolidated sediments. The formation contains what one source refers to as "spore and pollen assemblages and leaf impressions of ferns and cycads" from the early Cretaceous Period (Schweitzer 2003). Accordingly, the formation was laid down from about 140 million years ago to about 100 million years ago.

The Potomac Formation directly overlies the crystalline basement rock (in this case, the Indian Run sedimentary melange), and it is overlain in turn by younger sedimentary formations that make up most of the Coastal Plain (fig. 2). Across the creek from the nature center, the Potomac Formation comprises a

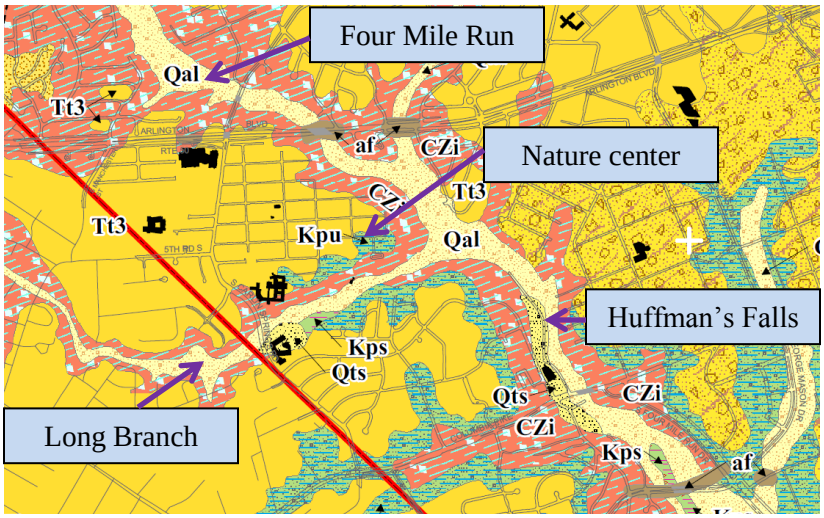


Figure 1—*Geologic map showing outcrops of the Potomac Formation near the Long Branch Nature Center. Green = Potomac Formation; pink = Indian Run sedimentary melange; yellow = Tertiary deposits; buff = alluvium in the creek beds. Source: Frost (1999).*

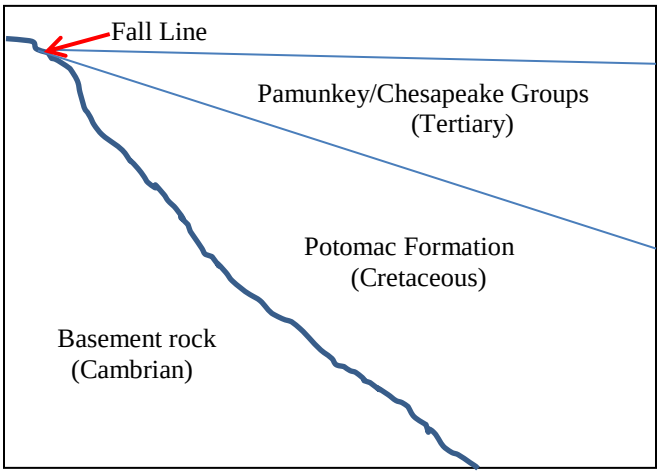


Figure 2—*Coastal Plain, with deposits that thicken to the east. Adapted from Meng and Harsh (1988).*

flat ledge (what geologists call a terrace). Farther back from the creek, where the hill rises up to another terrace, the Potomac Formation is overlain by younger sediments from the Tertiary Period, from about 66 million years ago to about 2 million years ago.

The formation's thickness ranges from "a feather-edge at the western limit of the outcrop to more than 3,500 feet in the subsurface of the outermost Coastal Plain" (Schweitzer 2003). Our local "feather-edge" is the Fall Line zone on Long Branch creek near the nature center (fig. 1). The Potomac Formation is more extensively exposed below Huffman's Falls (fig. 1), part of the Fall Line zone for Four Mile Run.

So where did the Potomac Formation come from?

Transportation and Deposition

About 250 million years ago, all of Earth's continents were joined in a supercontinent known as Pangaea, with what is now Virginia right in the middle. About 245 million years ago, the continents began pulling apart. The Atlantic Ocean took shape, along with the continental margins we see today.

Tectonic forces pushed the crystalline basement rock at the edge of North America up to become what we now know as the Piedmont. In turn, the crystalline bedrock subsided to form a basement for the Coastal Plain, which was (and is) barely above sea level.

When proto-Virginia was still embedded in Pangaea, its rivers ran from east to west—the New River in southwestern Virginia is a relic, part of the Ohio River system. An ancient mountain range, though worn away, still determined the topographic relief, tilting proto-Virginia to the west.

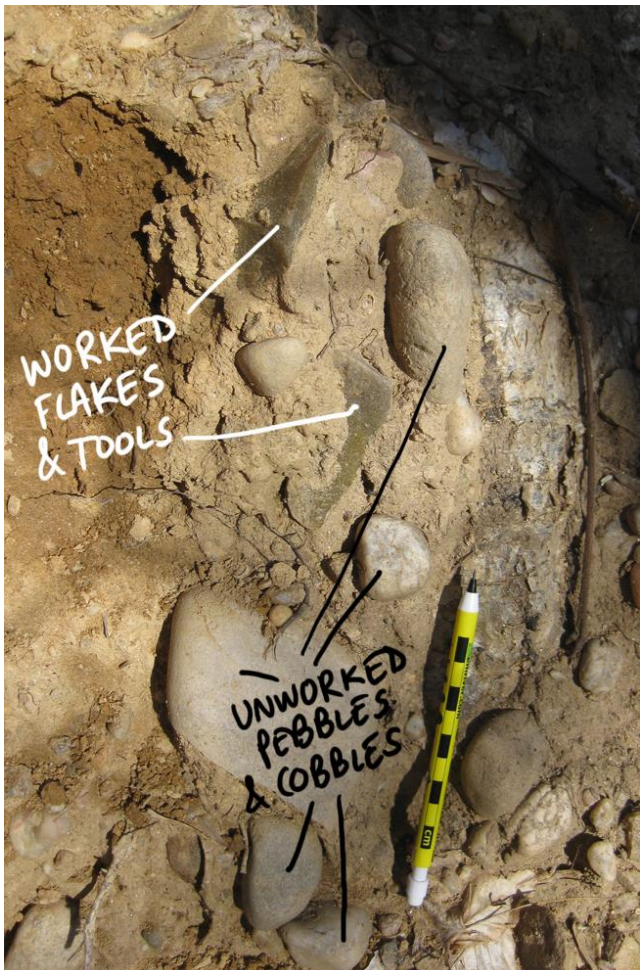
But now that the continents were splitting apart and a new ocean was forming, most of what is now Virginia began tilting to the east. East-flowing rivers developed, including forerunners of the Potomac, Rappahannock, and James. Their upper portions flowed over relatively steep east-facing gradients, cutting through the rock. But when they approached sea level, they slowed down to form broad, meandering river systems, very much like today.

Upstream, the fast-flowing rivers eroded rocks in the Piedmont, Blue Ridge, and Valley and Ridge geologic provinces and transported the materials downstream. When they reached the Coastal Plain below the Fall Line, they slowed and deposited the materials on the underlying bedrock, gradually building a layer of unconsolidated sediments—the Potomac Formation.

Ancient Sediments

Near the Long Branch Nature Center, the Potomac Formation comprises sizable rocks embedded in sands and silts, unsorted by size. The rocks are smooth and rounded, indicating their riverine origins; bounced and rolled for dozens or even hundreds of miles downstream, they lost their rough edges.

A rock from Long Branch alluvium (left) appears to be red sandstone similar to the Seneca Creek sandstone (right), a chip from a block quarried to build the Smithsonian Castle. Could the rock on the left also be Triassic rock from the Culpeper Basin? Photo: Hutch Brown.



Potomac Formation in Rock Creek Park, Washington, DC. The rocks are Antietam quartzite, some of them worked by American Indians into flakes and tools. Source: Bentley (2013).

Although Long Branch creek has washed away the matrix of sand and silt, the Potomac Formation survives in the rounded rocks that make up much of the creek bed near Long Branch Nature Center. Much of the cobble you see is clearly unrelated to the metamorphic bedrock—and could not have been formed by a creek that is at most a few miles long.

Much of the alluvium in the creek bed is quartz, with source material from both the bedrock and the Potomac Formation. More interesting, in a way, are the rounded rocks that are *not* quartz.

They appear to come from across the interior of Virginia. I have found what looks like red sandstone, similar in appearance to the red Seneca Creek sandstone that was quarried to build the Smithsonian Castle. Did sandstone in the Potomac Formation originate

Figure 3—*Antietam quartzite with skolithos trace fossils from the Potomac Formation, found in Norfolk, VA. Source: Labradorite (2014).*

in the Triassic basins of sedimentary rock located just to the east of the Blue Ridge geologic province? Or did it come from points beyond, such as the Valley and Ridge?

The Blue Ridge rocks are also represented. You can find chunks of Antietam quartzite buried in the Potomac Formation in our area, some of it used by American Indians to fashion tools. Antietam quartzite is the outermost in a group of layered metamorphic rocks at the eastern edge of the Blue Ridge Province.

Antietam quartzite is one of the few metamorphic rocks that contain fossils (fig. 3). It contains skolithos, a trace fossil made up of straight tubes formed

A rock from Long Branch alluvium appears to contain a trace fossil. Could it be skolithos in Antietam quartzite? Photo: Hutch Brown.

by marine worms burrowing in the Antietam sands about half a billion years ago.

In the Long Branch streambed below the parking lot for the nature center (just across from the Potomac Formation terrace), I found a piece of round white cobble with what appears to be a trace fossil *and* perhaps a crinoid (is that even possible?). The rock does not react with hydrochloric acid, so it is not carbonate. Is it a skolithos-bearing piece of Antietam quartzite that an ancient river transported from the Blue Ridge and deposited in the Potomac Formation at the Fall Line near the Long Branch Nature Center?

Clues to the Past

I don't know the answers to these questions, because I'm not a geologist and cannot easily recognize rocks or fossils. If anyone in our club has the answers, please let me know at hutchbrown41@gmail.com.

I plan to continue looking through the cobble in our local creeks for further clues to the past. If I find anything interesting, I will write about it in future newsletters.

Next issue: The quartz in our creeks—why there is so much of it when there is so comparatively little in the bedrock.

Sources

Bentley, C. 2013. Stone tools of the Piney Branch quarry, DC. Mountain Beltway, June 5. http://blogs.agu.org/mountainbeltway/2013/06/05/stone-tools-of-the-piney-branch-quarry-dc/

Frost, W.; Ernest, T. 1999. Simplified geologic map of Arlington County, Virginia, and vicinity. Arlington County, VA.

Labradorite. 2014. Antietam quartzite, Virginia. About.com Geology. http://geology.about.com/u/sty/more_metrocks/showtellmetrocks/Antietam-Quartzite-Virginia.htm

Meng, A.A., III; Harsh, J.F. 1988. Hydrogeologic framework of the Virginia Coastal Plain. USGS Prof. Pap. 1404–C. Washington, DC: U.S. Government Printing Office. http://pubs.usgs.gov/pp/pp1404-C/pdf/pp_1404-c.pdf

Schweitzer, P. 2003. Potomac Formation. U.S. Geological Survey, Reston, VA. http://mrdata.usgs.gov/geology/state/sgmc-unit.php?unit=VAKp;0

Murphy's Law: If Anything Can Go Wrong …

Editor's note: The piece is adapted from Mineral Humor, *a Website maintained by Larry Rush at http://mineralhumor.homestead.com/.*

Laws of Field Collecting

The enthusiasm of anyone under the age of 18 on a field trip with their parents expires at the beginning of the 6th minute at the site.

The level of enthusiasm maintained while digging in old dumps is inversely proportional to the number of snakes encountered.

Dan's Dilemma No. 1: All paths to collecting sites have more uphill sections than they have downhill sections.

Dan's Dilemma No. 2: All paths from collecting sites have more uphill sections than they have downhill sections.

Dan's Dilemma No. 3: The same paths double in length during your collecting period.

The vulnerability of fingers to hammer blows will be demonstrated at least once per collecting trip.

The person in the hole 2 feet to your left, right, back, or front will find a museum piece while your hole will be barren.

The safety factor of overhanging rock in a quarry wall is highest when there is no mineralization there.

Laws of Cleaning, Storing, and Saving Minerals

The last intended blow of the hammer will always smash the crystal.

The only crystal smashed will have been the best one collected that day.

An agate will orient itself to be sawn so that the ugliest portion of its interior will be exposed.

Acid baths will inevitably destroy the specimen while cleaning the matrix.

The specimens most carefully wrapped with tissue will fall from your hands while unwrapping.

Ever Come Across Green Obsidian?

by Andrew D. Thompson

Editor's note: The piece is adapted from Mineral Minutes *(newsletter of the Mineralogical Society of the District of Columbia), February 2014, pp. 3–5.*

One of the signs of a great presentation at a mineral club meeting is when people leave the meeting fired up to learn more about the topic and maybe get into the field to do some collecting. At the January 2014 meeting of the Mineralogical Society of the District of Columbia, the presentation by Smithsonian geologist Tim Rose hit the nail on the head.

Tim explained the geological makeup of the mysterious stone masks of the Teotihuacan culture, centered in a capital city 30 miles northeast of today's Mexico City. The masks were created by a little-known people; how they were used and what functions they served have puzzled anthropologists for decades.

We do know that the Teotihuacan people were master builders. Two large pyramids are still standing, with evidence of hundreds of smaller pyramids and precise city planning. The architectural skills of the Teotihuacans in many ways equaled those of the Egyptians. Their capital city was the largest in Mesoamerica, about 20 square miles in size and housing well over 100,000 people.

After thriving for nearly 5 centuries, the people of Teotihuacan abruptly left their capital city in 550 BC and disappeared. They left no writings.

Teotihuacan. View of the Avenue of the Dead and the Pyramid of the Sun from the Pyramid of the Moon. Source: Wikipedia.

Tim and his colleague, anthropologist Dr. Jane Walsh, traveled to Teotihuacan, most recently in late 2013, to research the geology and anthropology of the culture's famous stone masks. They gained access to more than 60 masks housed in the National Museum of Anthropology and the National Museum of Teotihuacan. They discovered that the masks are composed exclusively of four soft forms of stone: serpentine; travertine; limestone; and listwanite, a carbonate-altered form of serpentine.

None of the masks were made of obsidian, which is too hard to carve. Tim and Jane tentatively concluded that holes drilled into the masks were for dangling ornaments and that the masks perhaps served as a centerpiece in a larger artistic construction.

However, Tim mentioned that the residents of Teotihuacan mined and worked with obsidian. Like the opulent city itself, this particular obsidian was unlike any other found in the Americas. It had a green or greenish-golden tint highly prized by peoples throughout Mesomerica and even to the north, beyond the Rio Grande. Some say that this green obsidian, cut into blades, weapons, scrapers, jewelry, and so on, subsidized the entire Teotihuacan culture, including its massive buildings and murals covering the interior walls of households. At the very least, its production contributed to the economy, even if secondary to agriculture.

The Teotihuacan people had no metal, yet their obsidian blades were sharper, more durable, and superior to any metal or steel blades that existed then or even today. This green obsidian was the Teotihuacan

Green obsidian knapped to form edges that are razor sharp and nearly translucent.
http://www.davehaskell.com/images/obsidian.jpg

"metal," and it was as good as gold for trading with other cultures.

Most obsidian is a jet-black stone formed when lava quickly cools aboveground, becoming black glass. It is felsic, with a composition similar to granite, mainly feldspar and silica. It is easily knapped (through chipping off pieces with another rock) into objects with extremely sharp edges.

Throughout the history of our planet, volcanoes have been pervasive, so obsidian is fairly common. Geologists have mapped the ancient lava flows of Mesoamerica and found evidence of multiple flows, with later flows burying earlier ones. Some geologists have argued, however, that Mesoamerica has less obsidian than elsewhere.

Three sites are in the Valley of Mexico. Each mine is near Teotihuacan and each has yielded the extremely rare high-quality green obsidian. Its color and occasional chatoyancy (reflectiveness, like Tiger's eye) are due to its almost total lack of any inclusions or impurities. Green obsidian of lower quality is found elsewhere: it is milky in color and its edges, when backlit with a strong light, are not translucent.

The rulers of Teotihuacan kept total control over the production of obsidian and traded extensively throughout Mesoamerica. When it began to lose its edge, green obsidian could be repurposed from precision cutting to scraping and other uses. Today, the mines continue to yield green obsidian, though nowhere near in the quantities produced by the people of Teotihuacan. For today's householders, steel has replaced green obsidian to meet cutting needs, although mineral collectors, of course, prefer obsidian.

Green obsidian has yielded fascinating clues about Teotihuacan culture. While studying burial sites and correlating their content with the date of burials, anthropologists found green obsidian in the earlier centuries in the form of little figurines or trinkets in the graves of rich and poor alike. But in the later period, just before 550 BC, they found little or no green obsidian in the graves of common people. Forensic research of bones and teeth indicated that common people suffered from severe malnutrition, whereas the elite showed no signs of malnutrition. Moreover, the city's elite housing and temples survive only as charred remains, whereas the buildings of the commoners show no sign of burning or destruction. Such findings have raised a question: Did a revolt by the lower classes cause the collapse of the culture?

Unbelievable though such self-destructive behavior might appear to be, I was a young adult in 1968, and I remember seeing houses, food stores, and shops in downtown Washington, DC, being set afire by frustrated local residents. So the anthropologists' suggestion that Teotihuacan collapsed under political and economic strains might not be so farfetched.

Teotihuacan also shows signs of additional social strains, including severe drought in the early decades of the 6th century BC. Over the centuries, Teotihuacan also appears to have totally deforested the environment to provide fuel for burning limestone around the clock to manufacture the plaster used on temples and the interior walls of houses. Murals on interior walls portrayed the rituals of the priests and elite rulers, validating and reinforcing the authoritarian rule of the upper class.

Whatever the factors contributing to the downfall of this culture, one important relic is the green obsidian it left behind. I have never come across a piece of Teotihuacan green obsidian. But a wonderful aspect of collecting is that, once you have a clear picture of what you are looking for, your chance of finding it improves enormously.

That's why I am so grateful to researchers such as Tim and Jane for contributing to our understanding.

Upcoming Events
(of interest in the mid-Atlantic region)

February 2015

7: Cabochon Class (most first Saturdays of the month)—gem cutting and cabochons; Southern Maryland Rock and Mineral Club; Clear Water Nature Center; Sat 9–3; nonmember fee $30 (resident) or $36 (nonresident); register via SMARTlink.

14: 25th Annual Mineral, Jewelry & Fossil Show; Southern Maryland Rock and Mineral Club; Show Place Arena, 14900 Pennsylvania Ave, Upper Marlboro, MD; Sat 10–5; admission $5, senior citizens & students $4, children 12 & under and Scouts in uniform free; contact Michael Patterson at michael.patterson@pgparks.com.

14: Field trip, James Madison University, 9–3; hosted by Dr. Lance Kearns; contact Mike Pabst at michaelpabst@yahoo.com.

20–22: InterGem Show; Dulles Convention Center; Chantilly, VA.

March 2015

7–8: 52nd Annual Earth Science Gem and Mineral Show; Delaware Mineralogical Society, Inc.; Delaware Technical & Community College, 400 Stanton-Christiana Road, Newark, DE; Sat 10–6, Sun 11–5; $6 adults, $5 seniors, $4 children 12–16, under 12 free; http://www.delminsociety.org

14–15: 26th Annual Clifton/North Jersey Gem & Mineral Show; North Jersey Mineralogical Society; 775 Valley Road, Clifton, NJ (just off Rt. 3/46); Sat 10–6, Sun 10–4; for more info, see www.nojms.webs.com

15: 2nd Northern Virginia Maker Faire; NOVA Labs and Fairfax County Schools; major STEM event; advance tickets $15 adults, $5 students—at door $20 adults, $8 students; Reston, VA; http://makerfairenova.com/

21–22: Annual show, Franklin County Rock and Mineral Club, Inc.; Hamilton Heights Elementary School; 1589 Johnson Road, Chambersburg, PA ; Sat 10–5, Sun 10–4; $5, children 12 and under free with paying adult; more information from Mike Mowen, 717-264-9024, mlmo@innernet.net

21–22: 51st Annual Gem, Lapidary & Mineral Show; Gem, Lapidary & Mineral Society of Montgomery County; Montgomery Co. Fairgrounds, Gaithersburg MD; Sat 10–6, Sun 11–5; $6 for 12 & older, children free, Scouts in uniform free.

28–29: 46th Annual Che-Hanna Rock and Mineral Club Show; Athens Twp. Vol. Fire Hall, 211 Herrick Ave, Sayre, PA; Sat 9–5, Sun 10–4; contact Bob McGuire uvbob@epix.net

28–29: 15th Mineral Treasures & Fossil Fair 2015 Annual Show; the Philadelphia Mineralogical Society & the Delaware Valley Paleontological Society; LuLu Temple, 5140 Butler Pike, Plymouth Meeting PA (2 miles from Norristown exit, PA Turnpike); Sat 10–5, Sun 10–4; admission $5, 11 & under $1, uniformed Scouts free; information: www.philamineralsociety.org

28–29: 65th Annual EFMLS Convention and Show, sponsored by the Catawba Valley Gem and Mineral Club; Hickory Metro Convention Center, Hickory, NC.

April 2015

10–11: Annual Atlantic Micromounters Conference; Micromineralogists of the National Capital Area; Springhill Suites Alexandria Marriott, 6065 Richmond Hwy, Alexandria, VA. Registration at www.dcmicrominerals.org/.

18: Annual Jewelry Gem & Mineral Show; Patuxent Lapidary Guild, Inc.; Earleigh Heights VFC on Rte 2 in Severna Park, MD; 10–5; 10 and over $1, under 10 free.

May 2015

15–17: InterGem Show; Dulles Convention Center; Chantilly, VA.

18–24: Wildacres; Little Switzerland, NC; $390 plus materials fee; registration starts Jan 1; information at http://efmls-wildacres.org/

September 2015

26-27: 59th Annual Franklin-Sterling Gem & Mineral Show; Franklin Mineral Museum; Franklin School, 50 Washington Ave, Franklin, NJ; Sat 9–5, Sun 10–4; Outdoor Swap: Sat 7:30–6, Sun 10–5; adults $7, children 6–16 $4; http://spmom3.wix.com/franklin-gem-mineral

October 2015

23–25: AFMS Convention and Show, hosted by the Southwestern Federation; Austin, TX.

THE NORTHERN VIRGINIA MINERAL CLUB INC

Crystals are the flowers of the Mineral Kingdom

2015 Club Officers

President: Wayne Sukow
d8olite@fastmail.fm
Vice-President: Kathy Hrechka
kshrechka@msn.com
Secretary: Dave MacLean
dbmaclean@maclean-fogg.com
Treasurer: Rick Reiber
mathfun34@yahoo.com
Field Trip Chair: Ted Carver
jtcarve@msn.com
Webmaster: Casper Voogt
webmaster@novamineralclub.org
Communications: Jim Kostka
jkostka@juno.com
Editor: Hutch Brown
hutchbrown41@gmail.com
Show Co-Chair: Tom Taaffe
rockcllctr@aol.com
Show Co-Chair: Jim Kostka
jkostka@juno.com
Greeter/Door Prizes: Ti Meredith
ti.meredith@aol.com

PLEASE VISIT OUR WEBSITE AT:
http://www.novamineralclub

The Northern Virginia Mineral Club

You can send your newsletter articles to:

hutchbrown41@gmail.com

Visitors are always welcome at our club meetings!

RENEW YOUR MEMBERSHIP!

SEND YOUR DUES TO:
Kenny Loveless, Treasurer, NVMC
PO Box 10085, Manassas, VA 20108

OR

Bring your dues to the next meeting.

Purpose: To promote and encourage interest in and learning about geology, mineralogy, lapidary arts, and related sciences. The club is a member of the Eastern Federation of Mineralogical and Lapidary Societies (EFMLS, http://www.amfed.org/efmls) and the American Federation of Mineralogical Societies (AFMS—at http://www. amfed. org).

Dues: Due by January 1 of each year; $15 individual, $20 family, $6 junior (under 16, sponsored by an adult member).

Meetings: At 7:45 p.m. on the fourth Monday of each month (except May, November, and December)* at **Long Branch Nature Center**, 625 Carlin Springs Road, Arlington, VA 22204. (No meeting in July or August.)

**Changes are announced in the newsletter; we follow the snow schedule of Arlington County schools.*